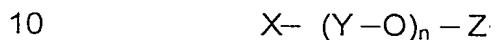


CLAIMS

What is claimed is:

1. A polymer comprising:

5 polymerized units of at least one reactive macromer of at least one alkylene oxide having at least one functional group capable of free-radical transformation, wherein said macromer comprises less than about 10 wt.% of total polymer weight and has a molecular weight (average) from about 100 to about 10,000, and said macromer has the formula



wherein Y is a straight or branched chain alkylene radical having 1 to 6 carbon atoms, X is a functional group capable of free-radical transformation, Z is H, C_mH_{2m+1} , phosphate, or the same as X, m is 1 to 8, and n varies in order to achieve said molecular weight (average).

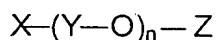
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2. A polymer of Claim 1, wherein Y has 2 to 4 carbon atoms, X comprises acrylate, methacrylate, allyl ether, vinyl ether, vinylbenzyl, vinylsulfonic ester, or mercaptan, and Z is hydrogen or methyl.

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3. A polymer of Claim 2, wherein said macromer comprises polymerized units of methoxy polyethylene oxide (meth)acrylate, at least one ethylenically unsaturated monomer having at least one carboxylic acid group, and at least one other comonomer, and said macromer has a molecular weight (average) from about 100 to about 5,000.

4. A polymer of Claim 3, wherein said ethylenically unsaturated monomer having at least one carboxylic acid group comprises acrylic acid, methacrylic acid or a mixture thereof, and said other comonomer comprises one or more of acrylic acid esters, methacrylic acid esters, unsaturated nitriles, styrenic monomers, vinyl esters, vinyl ethers, and conjugated dienes.
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5. A polymer of Claim 4, wherein X comprises acrylate or methacrylate, and said other comonomer comprises one or more of butadiene, acrylonitrile, styrene, methyl methacrylate, and n-butyl acrylate.
- 10
6. A polymer of Claim 1, wherein said polymer is in latex, solution or dispersion form.
- 15
7. A blend comprising:
- one or more one of a polymer (1) (in latex, solution or dispersion form) comprising polymerized units of at least one reactive macromer of at least one alkylene oxide having at least one functional group capable of free-radical transformation, wherein said macromer has a molecular weight (average) from about 100 to about 10,000, and said macromer has the formula
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wherein Y is a straight or branched chain alkylene radical having 1 to 6 carbon atoms, X is a functional group capable of free-radical transformation,

Z is H, C_mH_{2m+1} , phosphate, or the same as X, m is 1 to 8, and n varies in order to achieve said molecular weight (average), and

(2) one or more one other polymer latexes, solutions or dispersions.

5 8. A blend of Claim 7, wherein said polymer (1) also includes polymerized units of at least one ethylenically unsaturated monomer having at least one carboxylic acid group.

10 9. A blend of Claim 8, wherein Y has 2 to 4 carbon atoms, X comprises acrylate, methacrylate, allyl ether, vinyl ether, vinyl benzyl, vinylsulfonic acid, or mercaptan, and Z is hydrogen or methyl.

15 10. A blend of Claim 9, wherein said macromer comprises polymerized units of methoxy polyethylene oxide (meth)acrylate, acrylic acid or methacrylic acid or a mixture thereof, and at least one other comonomer, and said macromer has a molecular weight (average) from about 100 to about 5,000.

20 11. A blend of Claim 10, wherein said other comonomer comprises one or more of acrylic acid esters, methacrylic acid esters, unsaturated nitriles, styrenic monomers, vinyl esters, vinyl ethers, and conjugated dienes.

12. A blend of Claim 11, wherein X comprises acrylate or methacrylate, and said other comonomer comprises one or more of butadiene, acrylonitrile, styrene, methyl methacrylate, and n-butyl acrylate.

5 13. A blend of Claim 8, wherein said (2) other polymer comprises one or more of natural rubber, conjugated-diene-containing polymer, hydrogenated styrene-butadiene triblock copolymer, chlorosulfonated polyethylene, ethylene copolymer, acrylic ester copolymer, methacrylic ester copolymer, vinyl chloride copolymer, vinylidene chloride copolymer,
10 polyisobutylene, polyurethane, polyurea, and poly(urethane-urea).

15 14. A blend of Claim 13, wherein said (2) other polymer comprises one or more of (a) a butadiene-containing copolymer wherein said copolymer comprises polymerized units of butadiene and at least one comonomer of acrylonitrile and styrene, and (b) polychlorobutadiene.

20 15. A blend of Claim 14, wherein said butadiene-containing copolymer comprises a nitrile rubber comprising polymerized units of butadiene, acrylonitrile, and methacrylic acid.

16. A process comprising:

(A) preparing one or more polymers (in latex, solution or dispersion form) comprising polymerized units of at least one reactive macromer of at least one alkylene oxide having at least one functional group capable of free-

radical transformation, wherein said macromer comprises less than about 10 wt.% of total polymer weight and has a molecular weight (average) from about 100 to about 10,000, and said macromer has the formula



5 wherein Y is a straight or branched chain alkylene radical having 1 to 6 carbon atoms, X is a functional group capable of free-radical transformation, Z is H, C_mH_{2m+1} , phosphate, or the same as X, m is 1 to 8, and n varies in order to achieve said molecular weight (average);

10 (B) compounding one or more of said polymers with other ingredients, and making an article; and
 (C) curing said article.

17. A process of Claim 16, wherein Y has 2 to 4 carbon atoms, X comprises acrylate, methacrylate, allyl ether, vinyl ether, vinylbenzyl, 15 vinylsulfonic ester, or mercaptan, and Z is hydrogen or methyl.

20 18. A process of Claim 17, wherein said macromer comprises polymerized units of methoxy polyethylene oxide (meth)acrylate, at least one ethylenically unsaturated monomer having at least one carboxylic acid group, and at least one other comonomer, and said macromer has a molecular weight (average) from about 100 to about 5,000.

19. A process of Claim 18, wherein said ethylenically unsaturated monomer having at least one carboxylic acid group comprises acrylic acid,

methacrylic acid or a mixture thereof, and said other comonomer comprises one or more of acrylic acid esters, methacrylic acid esters, unsaturated nitriles, styrenic monomers, vinyl esters, vinyl ethers, and conjugated dienes.

5 20. A process of Claim 19, wherein X comprises acrylate or methacrylate, and said other comonomer comprises one or more of butadiene, acrylonitrile, styrene, methyl methacrylate, and n-butyl acrylate.

10 21. A process of Claim 16, wherein at least one salt is added during said process.

22. A process of Claim 21, wherein said salt comprises LiNO₃.

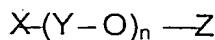
15 23. A process of Claim 16, wherein said article is made by a process comprising one or more of dipping, impregnation, saturation, spraying and coating of a substrate.

20 24. A process of Claim 23, wherein said substrate is one or more of a glove mold, paper or other non-woven material, fibrous material, rubber, plastic, and wood.

25. A process of Claim 24, wherein said article comprises a glove.

26. A process comprising:

(A) preparing a blend of one or more of polymer (1) (in latex, solution or dispersion form) comprising polymerized units of (a) at least one reactive macromer of at least one alkylene oxide having at least one functional group capable of free-radical transformation, wherein said macromer has a molecular weight (average) from about 100 to about 10,000, and said macromer has the formula



wherein Y is a straight or branched chain alkylene radical having 1 to 6 carbon atoms, X is a functional group capable of free-radical transformation, Z is H, C_mH_{2m+1} , phosphate, or the same as X, m is 1 to 8, and n varies in order to achieve said molecular weight (average), and (2) one or more other polymer latexes, solutions or dispersions;

(B) compounding said blend with other ingredients, and making an article; and

(C) curing said article.

27. A process of Claim 26, wherein said polymer (1) also includes polymerized units of at least one ethylenically unsaturated monomer having at least one carboxylic acid group.

28. A process of Claim 27, wherein Y has 2 to 4 carbon atoms, X comprises acrylate, methacrylate, allyl ether, vinyl ether, vinyl benzyl, vinylsulfonic acid, or mercaptan, and Z is hydrogen or methyl.

29. A process of Claim 28, wherein said macromer comprises polymerized units of methoxy polyethylene oxide (meth)acrylate, acrylic acid or methacrylic acid or a mixture thereof, and at least one other comonomer,
5 and said macromer has a molecular weight (average) from about 100 to about 5,000.

30. A process of Claim 29, wherein said other comonomer comprises one or more of acrylic acid esters, methacrylic acid esters, unsaturated
10 nitriles, styrenic monomers, vinyl esters, vinyl ethers, and conjugated dienes.

31. A process of Claim 30, wherein X comprises acrylate or methacrylate, and said other comonomer comprises one or more of butadiene, acrylonitrile, styrene, methyl methacrylate, and n-butyl acrylate.
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32. A process of Claim 26, wherein said (2) other polymer comprises one or more of natural rubber, conjugated-diene-containing polymer, hydrogenated styrene-butadiene triblock copolymer, chlorosulfonated polyethylene, ethylene copolymer, acrylic ester copolymer, methacrylic ester copolymer, vinyl chloride copolymer, vinylidene copolymer, polyisobutylene, polyurethane, polyurea, and poly(urethane-urea).
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33. A process of Claim 32, wherein said (2) other polymer comprises one or more of (a) a butadiene-containing copolymer wherein said

copolymer comprises polymerized units of butadiene and at least one comonomer of acrylonitrile and styrene, and (b) polychlorobutadiene.

34. A process of Claim 33, wherein said butadiene-containing
5 copolymer comprises a nitrile rubber comprising polymerized units of butadiene, acrylonitrile, and methacrylic acid.

35. A process of Claim 26, wherein at least one salt is added during
said process.

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36. A process of Claim 35, wherein said salt comprises LiNO₃.

37. A process of Claim 26, wherein said article is made by a process
comprising one or more of dipping, impregnation, saturation, spraying and
15 coating of a substrate.

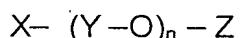
38. A process of Claim 37, wherein said substrate is one or more of a
glove mold, paper or other non-woven material, fibrous material, rubber,
plastic, and wood.

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39. A process of Claim 38, wherein said article comprises a glove.

40. An article comprising one or more polymers comprising:

polymerized units of at least one reactive macromer of at least one alkylene oxide having at least one functional group capable of free-radical transformation, wherein said macromer comprises less than about 10 wt.% of total polymer weight and has a molecular weight (average) from about 100 to about 10,000, and said macromer has the formula



wherein Y is a straight or branched chain alkylene radical having 1 to 6 carbon atoms, X is a functional group capable of free-radical transformation, Z is H, C_mH_{2m+1} , phosphate, or the same as X, m is 1 to 8, and n varies in order to achieve said molecular weight (average).

10 41. An article of Claim 40, wherein Y has 2 to 4 carbon atoms, X comprises acrylate, methacrylate, allyl ether, vinyl ether, vinylbenzyl, vinylsulfonic ester, or mercaptan, and Z is hydrogen or methyl.

15 42. An article of Claim 41, wherein said macromer comprises polymerized units of methoxy polyethylene oxide (meth)acrylate, at least one ethylenically unsaturated monomer having at least one carboxylic acid group, and at least one other comonomer, and said macromer has a molecular weight (average) from about 100 to about 5,000.

20 43. An article of Claim 42, wherein said ethylenically unsaturated monomer having at least one carboxylic acid group comprises acrylic acid,

methacrylic acid or a mixture thereof, and said other comonomer comprises one or more of acrylic acid esters, methacrylic acid esters, unsaturated nitriles, styrenic monomers, vinyl esters, vinyl ethers, and conjugated dienes.

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44. An article of Claim 43, wherein X comprises acrylate or methacrylate, and said other comonomer comprises one or more of butadiene, acrylonitrile, styrene, methyl methacrylate, and n-butyl acrylate.

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45. An article of Claim 40, wherein said article is made by a process comprising one or more of dipping, impregnation, saturation, spraying and coating of a substrate.

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46. An article of Claim 45, wherein said substrate is one or more of a glove mold, paper or other non-woven material, fibrous material, rubber, plastic, and wood.

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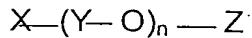
47. An article of Claim 46, wherein said article comprises a glove.

48. An article of Claim 40, wherein said article is cured.

49. An article comprising one or more blends comprising:

one or more one of a polymer (1) comprising polymerized units of (a) at least one reactive macromer of at least one alkylene oxide having at least one functional group capable of free-radical transformation, wherein said

macromer has a molecular weight (average) from about 100 to about 10,000, and said macromer has the formula



wherein Y is a straight or branched chain alkylene radical having 1 to 6 carbon atoms, X is a functional group capable of free-radical transformation, Z is H, C_mH_{2m+1} , phosphate, or the same as X, m is 1 to 8, and n varies in order to achieve said molecular weight (average), and

(2) one or more one other polymers.

10 50. An article of Claim 49, wherein said polymer (1) also includes polymerized units of at least one ethylenically unsaturated monomer having at least one carboxylic acid group.

15 51. An article of Claim 50, wherein Y has 2 to 4 carbon atoms, X comprises acrylate, methacrylate, allyl ether, vinyl ether, vinyl benzyl, vinylsulfonic acid, or mercaptan, and Z is hydrogen or methyl.

20 52. An article of Claim 51, wherein said macromer comprises polymerized units of methoxy polyethylene oxide (meth)acrylate, acrylic acid or methacrylic acid or a mixture thereof, and at least one other comonomer, and said macromer has a molecular weight (average) from about 100 to about 5,000.

53. An article of Claim 52, wherein said other comonomer comprises one or more of acrylic acid esters, methacrylic acid esters, unsaturated nitriles, styrenic monomers, vinyl esters, vinyl ethers, and conjugated dienes.

5 54. An article of Claim 53, wherein X comprises acrylate or methacrylate, and said other comonomer comprises one or more of butadiene, acrylonitrile, styrene, methyl methacrylate, and n-butyl acrylate.

10 55. An article of Claim 49, wherein said (2) other polymer comprises one or more of natural rubber, conjugated-diene-containing polymer, hydrogenated styrene-butadiene triblock copolymer, chlorosulfonated polyethylene, ethylene copolymer, acrylic ester copolymer, methacrylic ester copolymer, vinyl chloride copolymer, vinylidene chloride copolymer, polyisobutylene, polyurethane, polyurea, and poly(urethane-urea).

15 56. An article of Claim 55, wherein said (2) other polymer comprises one or more of (a) a butadiene-containing copolymer wherein said copolymer comprises polymerized units of butadiene and at least one comonomer of acrylonitrile and styrene, and (b) polychlorobutadiene.

20 57. An article of Claim 56, wherein said butadiene-containing copolymer comprises a nitrile rubber comprising polymerized units of butadiene, acrylonitrile, and methacrylic acid.

58. An article of Claim 49, wherein said article is made by a process comprising one or more of dipping, impregnation, saturation, spraying and coating of a substrate.

5. 59. An article of Claim 58, wherein said substrate is one or more of a glove mold, paper or other non-woven material, fibrous material, rubber, plastic, and wood.
60. An article of Claim 59, wherein said article comprises a glove.

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61. An article of Claim 49, wherein said article is cured.